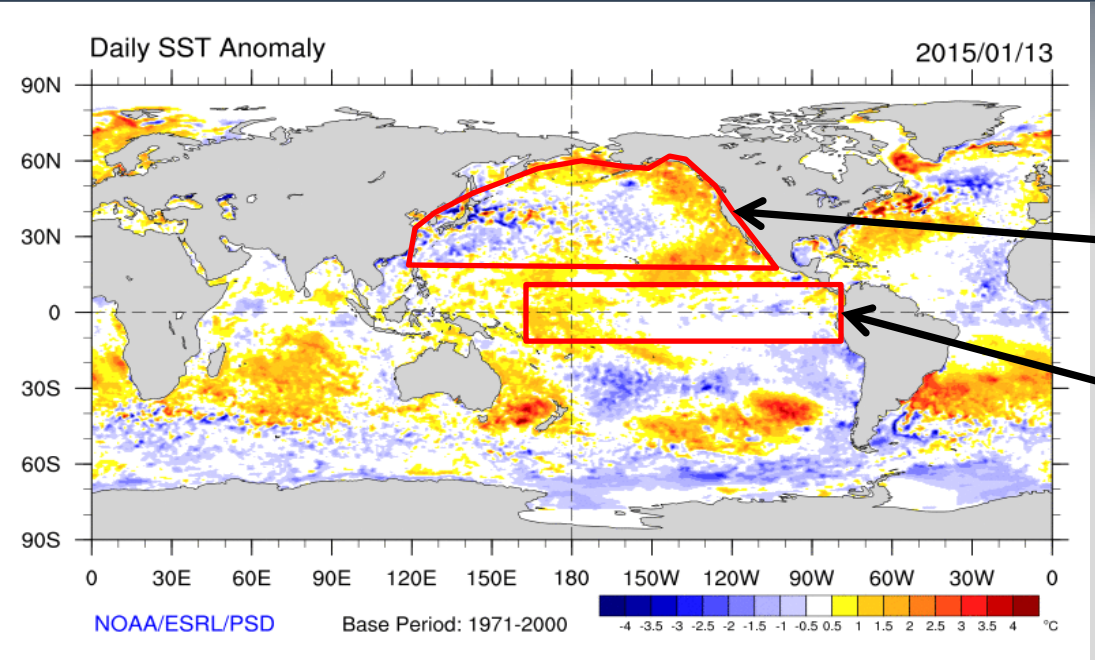
2014-15 Winter Outlook Update

Where is El Niño?

This is certainly not an El Niño-like SST Anomaly plot.

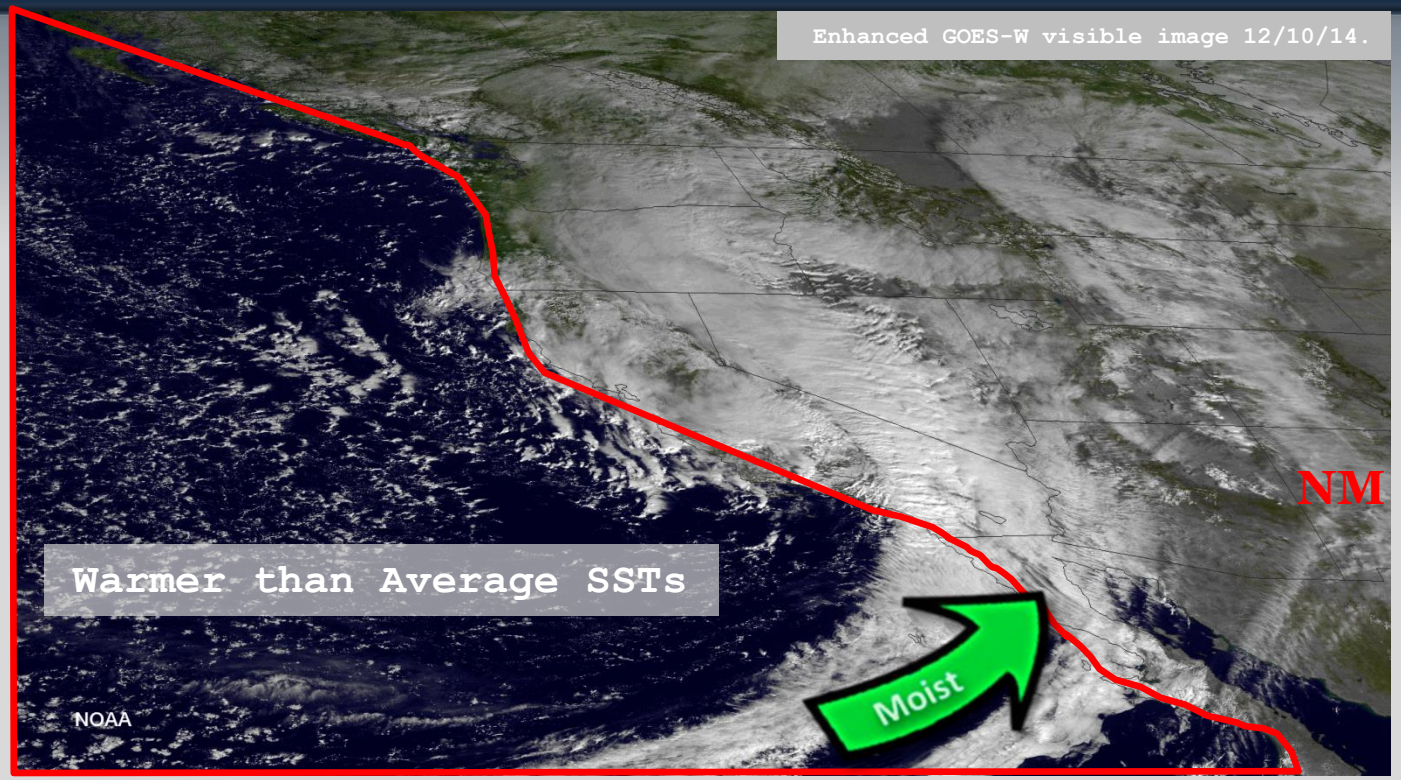


Pacific Decadal Oscillation (PDO) region

El Niño region(s)

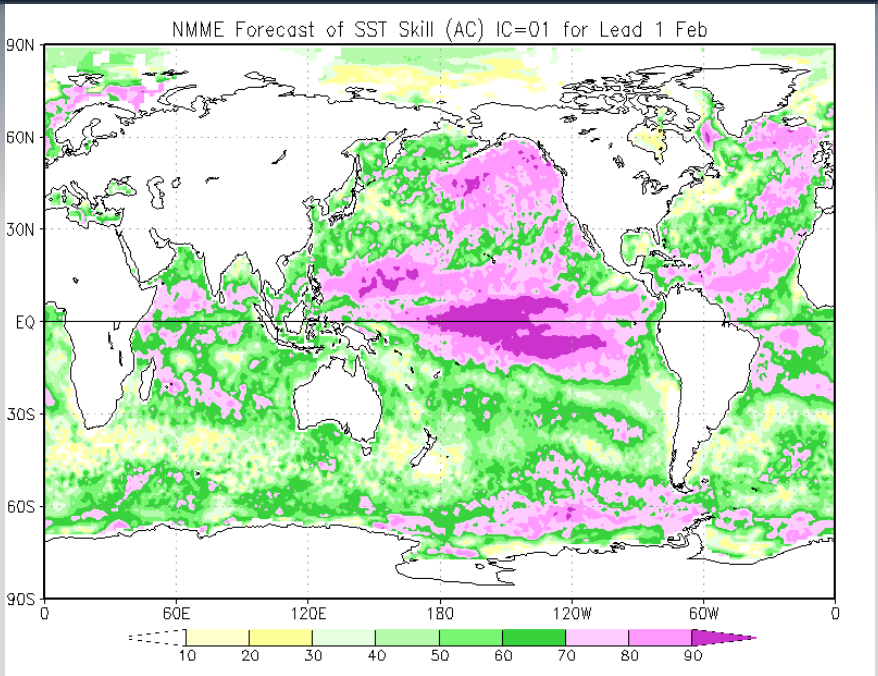
Earlier signs that an El Niño was close to developing in late December and early this month have faded in recent days. One climate scientist at the International Research Institute for Climate and Society, frustrated at the seemingly endless waiting for El Niño conditions to develop, dubbed it "El Limbo". While the 0.5°C Oceanic Niño Index (ONI) Sea Surface Temperature criteria for El Niño was met in late Autumn and early Winter (SON and OND), atmospheric responses to the warmer-than-average ocean waters were determined inadequate and therefore El Niño was not officially declared. The one "saving factor", however, for New Mexico has been a highly positive Pacific Decadal Oscillation (PDO). In fact, the December 2014 PDO index values was 2.51. This is the highest the PDO index has been since August of 1997 and highest December value ever recorded (since 1900).

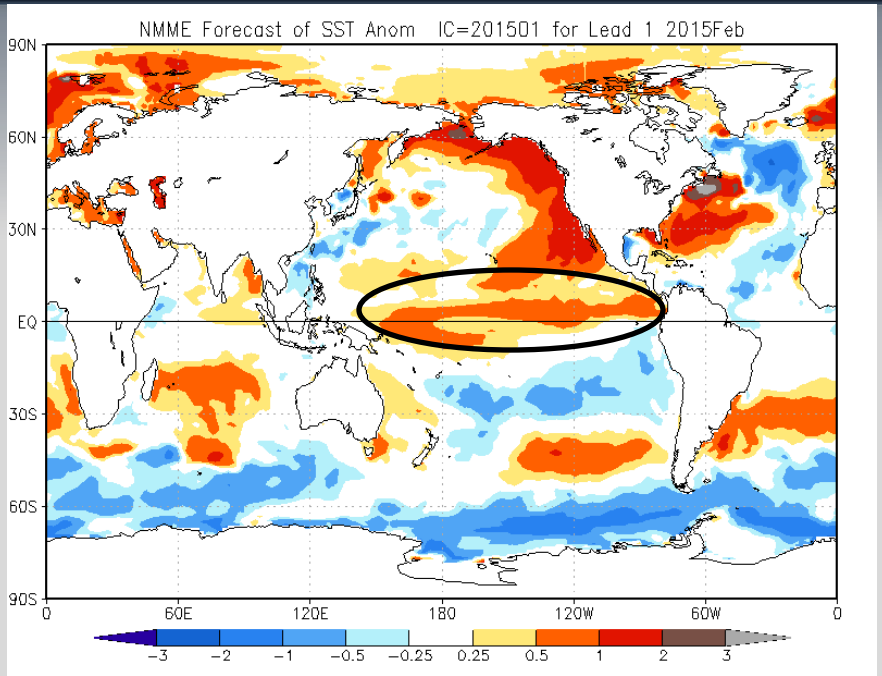
How did a positive PDO help matters?



Brief bouts of deep equatorial convection in the eastern Pacific Ocean resulted in a breakdown of the upper level ridge along west coast and for a strengthening southern sub-tropical jet stream. This southern stream was able to bring up plentiful low level sub-tropical moisture from the far eastern Pacific Ocean to portions of western and central New Mexico in early and mid December. The moisture content of the lower atmosphere in the sub-tropical areas of the far Eastern Pacific is much greater than average when SSTs in this area are above to well above average. For example, the Albuquerque International Sunport tied for 8th wettest all time (since 1897) for the month of December 2014 with 1.14″ of precipitation. Gallup recorded 1.83″ for 3rd wettest since records began there in 1973. Farmington came in with 0.88″ for the 5th wettest December since 1978 and Ghost Ranch came in with 1.22″ for the 8th wettest December since 1942. Unfortunately, much if not all of the precipitation was rain and did not contribute to mountain snowpack.

What Now?





The climate model with the highest skill score percentage (left image), the North American Multi-Model Ensemble (NMME), for February 2015 continues the status quo with regard to SST Anomalies in the Pacific (right image). This will likely equate to enough brief warming over the eastern equatorial Pacific Ocean for short-lived bouts of increased tropical convection and the breakdown of the west coast ridge. Keep in mind that this weather pattern is more favorable than the past three winter seasons for precipitation in New Mexico but it is not the pattern we expected in late autumn 2014. Without warmer than average SSTs in the eastern equatorial Pacific, any breakdowns of the west coast ridge will be short-lived. If interested, keep an eye on the daily SSTAs via this link: http://www.esrl.noaa.gov/psd/map/clim/sst.anom.anim.week.html. Also remember that the models with the higher skill score percentages for the eastern equatorial Pacific keep warmer than average SSTs going through summer 2015. Warmer than average Sea Surface Temperatures (SSTs) generally result in better odds for near to above average precipitation for New Mexico.

Summary

- **El Niño has yet to develop and current observations do not indicate development between now (1-15-2015) and the end of February 2015.**
- **Warmer than average Sea Surface Temperatures (SSTs) in the far northeastern Pacific Ocean (a.k.a., a positive PDO) led to storms in December and early January that were more moist than typical. This trend is expected to continue through February.**
- **The outlook for the remainder of January through February 2015 is for persistence or the status quo. This would equate to prevailing northwest flow aloft as a strong ridge of high pressure remains anchored near the west coast, with brief breakdowns in the ridge that allow storms to drop southeastward through the Great Basin and into New Mexico. Precipitation/Snowfall and Temperatures are forecast to be near average for late January through February.**